CLAIMS

We Claim:

1. A truncated neublastin polypeptide, wherein the amino terminus of said truncated neublastin polypeptide lacks one or more amino-terminal amino acids of a mature neublastin polypeptide.

2. The truncated neublastin polypeptide of claim 1, wherein said truncated neublastin polypeptide, when dimerized, binds to a RET polypeptide.

3. The truncated neublastin polypeptide of claim 1, wherein said truncated neublastin polypeptide, when dimerized, induces dimerization of said RET polypeptide.

4. The truncated neublastin polypeptide of claim 1, wherein said truncated neublastin polypeptide includes seven cysteine residues a positions corresponding to positions 16, 43, 47, 80, 81, 109, and 11 of the neublastin polypeptide sequence of SEQ ID NO:9.

5. A polypeptide comprising the amino acid sequence of a truncated neublastin polypeptide, wherein the amino acid sequence of said truncated neublastin polypeptide is less than 113 amino acids in length and includes an amino acid sequence at least 70% homologous to amino acids 122-220 of SEQ ID NO:9.

6. The polypeptide of claim 5, wherein the amino acid sequence of said truncated neublastin polypeptide is at least 80% homologous to amino acids 122-220 of SEQ ID NO:9.

7. The polypeptide of claim 5, wherein the amino acid sequence of said neublastin polypeptide is at least 90% homologous to amino acids 122-220 of SEQ ID NO:9.

8. The polypeptide of claim 5, wherein the amino acid sequence of said neublastin polypeptide is at least 95% homologous to amino acids 122-220 of SEQ ID NO:9.

9. The polypeptide of claim 5, wherein the amino acid sequence of said truncated neublastin polypeptide comprises amino acids 122-220 of SEQ ID NO:9.

10. The polypeptide of claim 5, wherein the amino acid sequence of said truncated neublastin polypeptide consists essentially of 99 amino acids.

11. The polypeptide of claim 5, wherein the amino acid sequence of said truncated neublastin polypeptide is at least 80% homologous to amino acids 119-220 of SEQ ID NO:9.

12. The polypeptide of claim 5, wherein the amino acid sequence of said neublastin polypeptide is at least 90% homologous to amino acids 119-220 of SEQ ID NO:9.

13. The polypeptide of claim 5, wherein the amino acid sequence of said neublastin polypeptide is at least 95% homologous to amino acids 119-220 of SEQ ID NO:9.

14. The polypeptide of claim 5, wherein the amino acid sequence of said truncated neublastin polypeptide comprises amino acids 119-220 of SEQ ID NO:9.

15. The polypeptide of claim 5, wherein the amino acid sequence of said truncated neublastin polypeptide consists essentially of 102 amino acids.

16. The polypeptide of claim 5, wherein said truncated neublastin polypeptide is obtained by

providing a mature neublastin polypeptide; and

contacting said mature neublastin polypeptide with at least one protease under conditions sufficient to produce said truncated neublastin polypeptide.

17. The polypeptide of claim 16, wherein said truncated neublastin polypeptide is produced as an exoprotease neublastin polypeptide digestion product by contacting said mature neublastin polypeptide with at least one exoprotease.

18. The polypeptide of claim 16, wherein said exoprotease is amino peptidase.

19. The polypeptide of claim 16, further comprising contacting said exopeptidase neublastin polypeptide digestion product with a dipeptidyl peptidase.

20. The polypeptide of claim 5, wherein said truncated neublastin polypeptide is glycosylated.

21. A nucleic acid comprising an open reading frame which encodes the polypeptide of claim 5.

22. A nucleic acid that hybridizes specifically under high stringency solution hybridization conditions to the nucleic acid of claim 21.

23. A method of using the neublastin nucleic acid of claim 21, comprising the step of causing a polypeptide encoded by said nucleic acid to be expressed in a cell.

24. The method of claim 23, further comprising the step of administering said nucleic acid to an animal, and causing said polypeptide to be expressed in said animal.

25. A vector comprising the truncated neublastin nucleic acid of claim 21.

26. The vector of claim 25, wherein said vector is an expression vector.

27. A method of using the vector of claim 26, comprising the step of causing a polypeptide encoded by said nucleic acid to be expressed from said nucleic acid.

28. A cell transformed with the nucleic acid of claim 21.

29. The cell of claim 28, wherein said cell is selected from the group consisting of a mammalian cell, a fungal cell, a yeast cell, an insect cell, and a bacterial cell.

30. The method of claim 29, wherein said mammalian cell is a Chinese hamster ovary cell.

31. The method of claim 29, wherein said mammalian cell is a cell derived from the mammalian central nervous system.

32. A method of making the truncated neublastin polypeptide of claim 5, said method comprising the step of expressing said polypeptide from the nucleic acid of claim 21.

33. The method of claim 32, comprising the step of culturing a cell comprising said nucleic acid in a culture medium which permits the production of said truncated neublastin polypeptide.

34. The method of claim 33, further comprising the step of recovering said polypeptide from said culture medium.

35. A purified truncated neublastin polypeptide obtained by the method of claim 32.

36. A pharmaceutical composition comprising a truncated neublastin polypeptide and a pharmaceutically acceptable carrier.

37. A pharmaceutical composition comprising a nucleic acid encoding a truncated neublastin polypeptide and a pharmaceutically acceptable carrier.

38. A method of administering the truncated neublastin polypeptide of claim 1, comprising the step of delivering said polypeptide to an in isolated cell or in vivo to a mammal.

39. The method of claim 38, wherein said administration in vivo comprises systemic administration.

40. The method of claim 39, wherein said mammal is afflicted with a condition selected from the group consisting of ischemic neuronal damage, traumatic brain injury, peripheral neuropathy, neuropathic pain, Alzheimer's disease, Huntington's disease, Parkinson's disease, amyotrophic lateral sclerosis, and memory impairment.

41. The method of claim 40, wherein said mammal is afflicted with a neuronal disorder of the peripheral nervous system, the medulla, or the spinal cord.

42. A method of treating a neurodegenerative disease or disorder in an animal, comprising administering to said animal the truncated neublastin nucleic acid of claim 23.

43. A method of treating a neurodegenerative disease or disorder in an animal, comprising administering to said animal the truncated neublastin polypeptide of claim 1 or the polypeptide of claim 5.

44. A method of treating a peripheral neuropathy in a mammal, comprising administering a therapeutically effective amount of a truncated neublastin polypeptide to said mammal.

45. The method of claim 44, wherein said peripheral neuropathy is selected from the group consisting of trauma-induced neuropathies, chemotherapy-induced neuropathies, toxin-induced neuropathies, drug-induced neuropathies, vitamin-deficiency-induced neuropathies; idiopathic neuropathies; and diabetic neuropathies.

46. The method of claim 45, wherein the truncated neublastin polypeptide is delivered directly into the central nervous system.

47. The method of claim 46, wherein the truncated neublastin polypeptide is delivered systemically by subcutaneous injection, intravenous administration, or intravenous infusion.

48. A method of treating neuropathic pain in a mammal, comprising administering a therapeutically effective amount of a truncated neublastin polypeptide to said mammal.

49. The method of claim 48, wherein said neuropathic pain is associated with toxin-induced nerve damage, pathogen-induced nerve damage, inflammation-induced nerve damage, or neurodegeneration.

50. A method of treating a peripheral neuropathy in a mammal, the method comprising administering a therapeutically effective amount of a nucleic acid encoding truncated neublastin polypeptide to said mammal.

51. The method of claim 50, wherein said peripheral neuropathy is selected from the group consisting of trauma-induced neuropathies, chemotherapy-induced neuropathies, toxin-induced neuropathies, drug-induced neuropathies, vitamin-deficiency-induced neuropathies; idiopathic neuropathies; and diabetic neuropathies.

52. The method of claim 50, wherein the nucleic acid encoding said truncated neublastin polypeptide is delivered directly into the central nervous system.

53. The method of claim 50, wherein the truncated neublastin polypeptide is delivered systemically by subcutaneous injection, intravenous administration, or intravenous infusion.

54. A kit comprising, in one or more containers, a substance selected from the group consisting of a truncated neublastin polypeptide and a nucleic acid encoding a truncated neublastin polypeptide.